National Institute of Environmental Health Sciences

The synthetic evaluation model for analysis of flooding hazards

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Abstract:

BACKGROUND: Although many previous epidemiological studies have reported the incidence of diseases, mortality rate and economic losses after natural disasters, none of these studies has been comprehensive enough. Our aim was to establish a synthetic evaluation model (SEM) that can be used to analyze flood hazards. METHODS: Initial evaluation indicators were selected using systematic and literature data analysis. These indicators were tested with single or multiple variable analyses. Final evaluation indicators and their weights were determined using the Delphi procedure. We established a SEM of flood hazards using the hierarchy method and tested the model using jack-knife analysis. RESULTS: The SEM on flood hazards consists of 6 first-rank indicators and 24 second-rank indicators. First-rank indicators were: direct casualties (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.2123), the increased incidence and prevalence rate of the disease (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.1715), excess mortality rate (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.1745), mental injury (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.1038), epidemic focus expansion (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.1572) and economic loss (w Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.1807). The agreement of the model reached 98.2% tested with the jack-knife analysis. CONCLUSION: A SEM of flood hazards was established with an agreement of 98.2%, which can be used to evaluate the hazards, and assist public health-care workers provide appropriate flood disaster management.

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Resource Description

Communication: ☑

resource focus on research or methods on how to communicate or frame issues on climate change; surveys of attitudes, knowledge, beliefs about climate change

A focus of content

Communication Audience: ☑

audience to whom the resource is directed

Health Professional

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event

Extreme Weather Event: Flooding

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Global or Unspecified

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease, Injury, Mental Health/Stress

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: General Foodborne/Waterborne Disease

Mental Health Effect/Stress: Stress Disorder

Medical Community Engagement:

resource focus on how the medical community discusses or acts to address health impacts of climate change

A focus of content

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Exposure Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article, Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment: ☑

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content